Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

End Semester Examinations
A.Y.: Jan 2023

Q1b	Define heuristic function. Give an example of heuristics function for 8-puzzle problem and find the value of heuristic for a particular state of it. **OR** With suitable diagram explain the following concepts: i. shoulder ii. Ridge iii. Local maximum iv. Plateau	5 5
Q2a	Explain conditional planning with respect to fully and partially observable environment with suitable example.	10
Q2b	Design a classical planner for air cargo transportation problem using STRIPS. The problem involves loading, unloading cargo and flying it from place to place. Define three actions: Load, Unload and Fly. The actions affect two predicates: In (c, p) means that cargo c inside plane p, and At (x, a) means that object x (either plane or cargo) is at airport a. **OR** Compare planning agent and problem-solving agent in AI.	5 5
Q3a	(1) State and briefly explain various environment types. (2) Explain simplex reflex agent with suitable diagram.	6 4
Q3b	What are PEAS descriptors? Explain PEAS descriptors for part picking robot. **OR** Explain working of expert system with suitable diagram.	5 5
Q4a	(1) Define the Wumpus world problem and describe its environment. (2) Translate below statements into FOL (First Order Logic) i) All purple mushrooms are poisonous. ii) You can fool some of the people all of the time. **OR** Consider following axioms: 1. All people who are graduating are happy. 2. All happy people smile. 3. Someone is graduating. i) Represent these axioms in First-Order-Predicate-Logic ii) Convert each formula to clause form iii) Prove that "is someone smiling?" using resolution technique and draw corresponding resolution tree.	5 5 10
Q4b	Explain semantic network knowledge representation technique with suitable example, pros and cons.	5
Q5a	Illustrate the need of probabilistic reasoning. Explain conditional probability with appropriate example.	10
Q5b	Explain case-based reasoning with suitable example.	5

All the Best!

Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

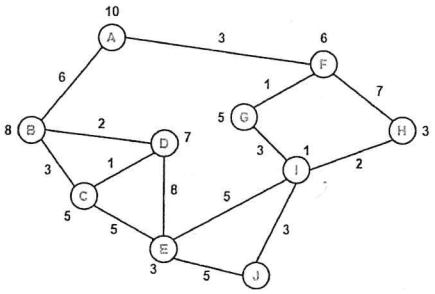
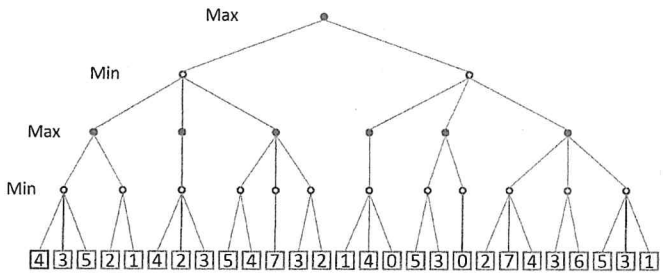
End Semester Examinations
A.Y.: Jan 2023

Academic Year (2022-23)
Year: Semester: V

Program: B. Tech. (Information Technology.) **Max. Marks: 75**
Subject: Artificial Intelligence (Minors) **Time: 10:30 am to 1:30 pm**
Date: 03/01/2023 **Duration: 3 Hours**

REGULAR EXAMINATION

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.
(1) This question paper contains 2 pages.
(2) All Questions are Compulsory.
(3) All questions carry equal marks.
(4) Answer to each new question is to be started on a fresh page.
(5) Figures in the brackets on the right indicate full marks.
(6) Assume suitable data wherever required but justify it.
(7) Draw the neat, labelled diagrams, wherever necessary.

Question No.		Max. Marks
Q1a	Consider the graph given below. Assume that the initial state is A and the goal state is J. Show how A* Search would create a search tree to find a path from the initial state to the goal state. Show the working of the algorithm step wise and report the solution and its cost. The numbers written on edges represent the distance between the nodes. The numbers written on nodes represent the heuristic value.  **OR** State and explain MINIMAX rule for the game tree. Apply alpha-beta pruning on the below tree. Show the process step-wise. 	10 10